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HEADLINE: NCSU to map out tobacco

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BODY:

RALEIGH -- Cigarette maker Philip Morris USA will pay N.C. State University $ 17.6 million to map the genome of the tobacco plant, placing the campus at the leading edge of new terrain in tobacco research.

The research contract announced Wednesday is the largest ever received by the College of Agriculture and Life Sciences and one of the biggest obtained by NCSU. All its findings will be made public.

"We're hoping that once key genes are located, various approaches can be designed to assist us to reduce some of the harm associated with smoking," said Jennifer Golisch, a spokeswoman for Philip Morris.

NCSU scientists said the project could provide significant insight into the molecular workings of tobacco that could be applied to other plants, including food crops. But not all plant geneticists agree.

Jeff Dangl, a UNC-Chapel Hill plant biologist active in a national effort to set research priorities in the field, said mapping the full genetics of tobacco is not a pressing need for basic scientists. That's because genomes of plants related to tobacco are already being decoded. "Tobacco didn't even come up on the hit list," he said.

Some academics shun funding from tobacco companies, which now admit they make an addictive and dangerous product. In past years, the industry used research they financed to counter evidence that smoking is dangerous.

But NCSU has a long history of working with the companies and helping tobacco growers. For years, R.J. Reynolds Co. was the largest private financer of tobacco-related research at NCSU, but in recent years, Philip Morris has taken that role, said Johnny Wynne, director of agricultural research service at the

Source: https://www.industrydocuments.ucsf.edu/docs/ynhj0001

university.

Philip Morris contributed $ 499,000 to the campus in 2002 to subsidize research, faculty salaries, extension programs, scholarships and other areas.

Mapping a genome involves locating significant genes that orchestrate how an organism functions at the molecular level. Once a plant's genetics are understood, they can be altered, to make a corn plant more resistant to disease, for instance, or a tomato more attractive to consumers.

The cigarette industry already has shown interest in re-engineering tobacco plants. Vector Tobacco in Durham has purchased the right to use a genetically altered tobacco plant that is nearly free of nicotine and was developed at NCSU.

The NCSU tobacco genome mapping project grew out of a discussion Wynne had with Philip Morris representatives more than a year ago. Wynne mentioned the need for more genetic studies into tobacco while discussing Philip Morris' support of the university's tobacco breeding program.

As part of a pilot study, Charles Opperman and Steve Lommel, two plant genetics researchers leading the project, developed clones of tobacco DNA and tested gene-tracking techniques to show they had the necessary equipment to pull off the project.

Opperman and Lommel hope to identify about 90 percent of the tobacco plant's genes, which are believed to outnumber those in humans. They won't try to describe the function of each gene but expect researchers elsewhere will pursue that work on a more piecemeal scale, depending on their interests.

Despite skepticism from Dangl, Opperman and Lommel said they think information derived from their gene-hunting project, which is expected to take more than four years, will be of use outside the tobacco industry.

"The genome hands you the keys to do a whole range of experiments," Opperman said.

Tobacco plants are compared to white mice in plant labs. They are easy to use because they are hearty and easy to grow, even from clumps of cells in petri dishes. Scientists already stage experiments on genes active in other plants in tobacco plants.

Also, there is persistent interest in exploring alternative markets for tobacco plants, even in growing human proteins for drug companies or other commercial products inside tobacco leaves. That industry remains more of a promise than a reality, however.

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Opperman said he thinks the Philip Morris project will enhance the university's efforts to develop its genomic sciences programs, a hot area with many funding opportunities. He never considered declining the opportunity because a cigarette company is paying the bills, he said.

"This plant is such an important research model," he said. "I never thought about the stigma."

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